

REMARKS

Claims 14-17 and 19 are now pending in the application. The amendments to the claims contained herein are of equivalent scope as originally filed and, thus, are not a narrowing amendment. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102

Claims 1-4, 14, 19 and 20 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Rodesch (848,207). This rejection is respectfully traversed.

Claims 1-4, 19 and 20 have now been cancelled. Thus further comment on those claims at this stage is moot.

Independent claim 14 has been amended to introduce the limitations of claim 18 and the limitation of “through an alignment work carried out, once.” The applicants note that the examiner did not reject claim 18 under 35 U.S.C. 102(b), thus applicants think amended claim 14 to be distinguishable over Rodesch.

REJECTION UNDER 35 U.S.C. § 103

Claims 6-8, 10-13 and 15-18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Rodesch in view of Broadmoore (5,081,893). This rejection is respectfully traversed.

The applicants submit that claim 14 as amended recites a novel, non-obvious method that is advantageous over the combination of Rodesch and Broadmoore. Thus applicants argue against the rejection as follows.

A particular feature of the present invention defined in claim 14 is directed to the step e), i.e., "aligning said plungers fitted to said actuator holder with said holes through an alignment work carried out, once." This feature is desirable, because the retrofitting work is easier than the prior art work disclosed in Rodesch and Broadmoore.

As well known in the art, the acoustic keyboard musical instrument has a large number of keys, typically eighty-eight keys. In order to move the keys, independently, the same large number of actuators is required as the large number of keys. The fitting work on such a large number of actuators and keys involves the repetitive and tedious process of connecting work between the key and the actuator. The repetition is time-consuming, and increases the cost for retrofitting.

In this situation, the actuator holder makes the alignment between the actuators and holes easy and speedy. The plungers are respectively aligned with the holes appropriately for the worker. This facilitates alignment of the actuator holder to the bottom board.

Although the examiner admits that Rodesch does not specifically mention the limitations of claims 15 and 1S, the examiner gives a comment on claim 18 as "Certainly, Rodesch would devise a system to correctly position the solenoids and actuators, otherwise, the Rodesch invention would be inoperable. (See Official Action, page 5, lines 3 to 7). The applicants insist that Rodesch's "system" is at least different from the step e). Therefore, the examiner's reliance upon hindsight is inappropriate.

Rodesch employs "motor-pneumatics 17" in the automatic piano as the actuators for the action-keys (see front page, the right column, lines 105 to 107),

and each motor-pneumatics has a fixed member and a movable member below the key table 2. (See page 2, the left column, lines 1 to 5). The applicants think that the fixed member and movable member are respectively corresponding to the "converter" and "plunger" of the actuator defined in amended claim 14, because the fixed member converts the air pressure to the movement of the movable member. Thus, the motor-pneumatics per se are provided under the key table. For this reason, the vertical pull connectors 18 are required for the motor-pneumatics. (See page 2, the left column, lines 8).

Rodesch teaches that the vertical pull connectors 18 are made of "pliable material such as leather" (see page 2, the left column, lines 7). The vertical pull connectors 18 can not keep themselves straight before being tied with the keys. For this reason, it is highly impractical that a worker could simultaneously force all of the vertical pull connectors 18 to pass the holes of the key table 2 from the space under the key table 2. In other words, in the prior art combination, the worker cannot fit the actuators to the keys in the manner defined in the step e) of amended claim 14. Although Rodesch does not teach how a worker connects the motor-pneumatics to the keys by means of the vertical pull connectors 18, the applicants presume the vertical pull connectors to be firstly tied with the keys, subsequently, passed through the holes from the space over the key table and, finally, tied with the movable members. It is necessary for the worker to repeat the above-mentioned steps for all the keys. This repletion is time consuming, and makes the assembling work costly.

The other cited reference, i.e., Broadmoore also does not teach the step e). As shown in figure 2 of Broadmoore, the striker solenoid assemblies 3 are held in meshing engagement with the mounting plate 2. This means that a worker screws each striker solenoid assembly 3 into the associated hole. The applicants think it impossible to secure the mounting plate 2 to the grand piano key bed 1, because the mounting plate 2 is fixed to the grand piano key bed 1 by means of screws 4 driven thereinto from the space between the keys 10/11 and the grand piano key bed 1. The mounting plate 2 is firstly fixed to the grand piano key bed 1 before a worker mounts the keyboard on the grand piano key bed 1, and, thereafter, the striker solenoid assemblies 3 are screwed into the female screws defining the holes.

Thus, the applicants think that the step e) is not disclosed in both Rodesch and Broadmoore. The applicants insist that the present invention defined in amended claim 14 is advantageous over the teachings of the cited references.

CONCLUSION

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action and the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

Dated: 01/19/2007 Electronic Signature: /Gregory A. Stobbs/
Gregory A. Stobbs, Reg. No. 28,764
HARNESS, DICKEY & PIERCE, P.L.C.
P.O. Box 828
Bloomfield Hills, Michigan 48303
(248) 641-1600
Attorney for Applicant

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